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the body of its host, as with *Lipeurus celer* Kellogg of the Fulmars, of which parasite I have collected nearly one hundred specimens from a single bird, and which is always abundantly present on its host. Or the individuals may be few although the parasite is a constant one, *i. e.*, almost always to be found on any specimen of the host examined. *Trinoton luridum* Nitzsch of the Ducks is rarely numerous on its host although sure to be present on any Duck specimen examined.

With these scattered observations I close my paper, only hoping that some bird collectors may derive from these notes an interest in the Mallophaga sufficient to induce them to collect these parasites, as their collection can be made more conveniently by bird collectors than by entomologists. The preservation of the specimens is a simple matter. Drop all of the parasites obtained from a host individual (from a single bird, not bird species), into a vial of 85% achohol, and label the vial with name of bird, locality, date and name of collector. I shall be glad to receive specimens to examine, determine and return, or, if permitted, to add to my collection.

THE PROTHONOTARY OR GOLDEN SWAMP WARBLER
(*PROTONOTARIA CITREA*) A COMMON SUMMER
RESIDENT OF SOUTHEASTERN
MINNESOTA.

WITH PHOTOGRAPHS FROM NATURE BY THE AUTHOR.

THE apology that I feel to be due for appearing before the Union¹ with a local paper of this kind, dealing as it does with a bird about which so much that is excellent has been written, is that the facts to be presented establish in no uncertain way a remarkable northward extension of the breeding range of a bird hitherto commonly regarded as of much more southern distribution.

¹This paper was read at a meeting of the American Ornithologists' Union held in Washington, Nov. 15, 1898.

Without delaying to define at length the general range of the Prothonotary Warbler it will suffice to recall to mind that it is commonly considered as breeding in abundance in the Mississippi Valley only as far north as southern Iowa and middle Illinois. Beyond this it is looked upon as merely a straggler. Ridgway, in 'Birds of Illinois,' says: "Breeding abundantly in willow swamps north to at least 40° in Illinois and contiguous States." Keyes and Williams in their 'Catalogue of Birds of Iowa' say: "Summer resident; not uncommon especially in the eastern part of the State." Records for northern Iowa and Wisconsin are infrequent and merely call attention to the capture of rare stragglers. Cook's 'Bird Migration in the Mississippi Valley' contains nothing more definite. The 'A. O. U. Check-List' for 1895 states, "Casually to New England, Ontario, and Minnesota." Dr. Hvoslef's capture of a single Prothonotary Warbler opposite the mouth of the Root River below La Crosse, August 16, 1874, though several times quoted as a Minnesota record belong properly to Wisconsin. Cantwell, in his 'List of the Birds of Minnesota,' published in the 'Ornithologist and Oölogist' for September, 1890, states, from information gathered from Johnson of Red Wing and Harrison of La Crescent: "Common along the Mississippi River in the South as at Red Wing and La Crescent; breeding at both places." In 'The Oölogist' for November, 1890, appeared a short article by Mr. Whit Harrison, of La Crescent, Houston County, Minnesota, calling attention to the Prothonotary Warbler as a regular summer resident in southeastern Minnesota. He did not at that time consider the bird common, and the article is chiefly devoted to an interesting account of some curious nesting sites selected by the species, to which reference will be made later in this paper. In 'Bulletin No. 4 of the Wilson Ornithological Chapter,' published at Oberlin, Ohio, January 15, 1895, there is a report of a nest of the Prothonotary Warbler, "taken in Goodhue County, Minnesota, June 13, 1893." In 'The Oölogist' for June, 1898, is an article by Mr. C. B. Johnson of Red Wing, Goodhue County, Minnesota, giving for the first time definite and conclusive testimony as to the regular and common occurrence of this Warbler at that locality, one hundred and fourteen miles by way of the Mississippi Valley from the southern boundary line

of Minnesota. The account is based on ten years' observations, and after giving a concise description of the nesting habits, nests and eggs, dates of arrival, etc., concludes with the statement: "It certainly should be classed as fairly common in suitable localities along the Mississippi River in southern Minnesota." This completes the literature of the subject.

The appearance of Mr. Johnson's article, offering as it did the attractive prospect of an invasion of the breeding haunts of so interesting and beautiful a bird as the Prothonotary Warbler, and in a locality so far from its ascribed range, determined the writer upon spending a week's vacation in exploring the Mississippi bottom-land in southeastern Minnesota instead of penetrating into the wilds of the Lake of the Woods region as had been planned. Leaving Minneapolis, June 20, 1898, accompanied by Mr. L. O. Dart of Litchfield, Minnesota, an earnest and competent student of birds, we began our investigations the following day at Red Wing, a point on the Mississippi River forty miles south of St. Paul. We were here very materially assisted by Mr. C. B. Johnson who kindly spent part of the first day with us and piloted us into the difficultly accessible haunts of the bird of which we were in search. So surprising were the results of the three days spent here that we decided to continue the trip down the river to the Iowa line in order to obtain a more comprehensive view of the distribution and numbers of the Warbler in question. The railroad follows closely the river bank all the way so that we were able to easily make satisfactory observations at many points. At La Crescent a day was spent and our observations were supplemented by comparisons with those of Mr. Harrison and Mr. Frank Harris, both of whom have interesting local collections of birds and eggs and have devoted no little attention to observing the birds of the immediate vicinity. Reno, six miles north of the Iowa line, was the most southerly point visited and found to be the most interesting place for field work. From this point the rugged and heavily wooded valleys of Crooked and Winnebago Creeks were explored for a distance of twelve to fifteen miles back from the Mississippi River, quite out onto the high rolling prairie region westward. The very heavily wooded Root River bottom was not visited, as Dr. Hvoslef of Lanesboro has given it



FIG. 1. NESTING PLACE OF PROTHONOTARY WARBLER.
Near Reno, Hamilton Co., Minn.



FIG. 2. PROTHONOTARY WARBLER. Nesting stump and characteristic environment. Lower right-hand corner, nest and eggs exposed in situ. Near Redwing, Goodhue Co., Minn.

considerable attention for years past. Immediately on our return to Minneapolis, Mr. Dart at my request went back to Hastings, a point on the River twenty miles below St. Paul, and twenty miles above Red Wing where we first saw the Prothonotary Warbler, and dropped down the river some miles in a boat to determine, if possible, the northernmost limit of distribution of the bird. In this he was fairly successful.

The bottomland of the Mississippi River, particularly from the entrance of the St. Croix River, twenty miles below St. Paul and one hundred and thirty-four miles from the Iowa line, is a broad expanse of low land three to six miles in width and enclosed between high, broken and picturesque bluffs three hundred to six hundred feet high. A portion of this low ground is open marsh and meadow land, but the greater part of it is covered with a dense growth of willow, cottonwood, aspen, box-elder and birch, and here and there are heavy forests of larger growth, with elm, maple, and butternut added, and a luxuriant growth of tangled woodbine, poison ivy, grape and other vines. The main channel of the river winds through this valley in great sweeping curves, first to one side and then far away to the foot of the bluff opposite. It is continually sending off side channels and false passages so that the entire bottomland is divided up into innumerable islands and irregular strips of land. This is particularly true of the six or eight miles lying between the head of Lake Pepin and Red Wing, and of the whole valley from La Crescent to the Iowa line. In early spring, with the first rise of the melting snow, and again during the 'June freshet,' a large part of this lowland is overflowed, often to a considerable depth, so that a boat can be run almost anywhere where the smaller undergrowth and vines do not block the way. Some portions of the bottomland are occasionally flooded quite throughout the year, and are dreary, desolate places indeed. The action of the ice in spring, combined with the effect of the floods, has resulted in the death of vast numbers of the smaller trees, particularly the willows which fringe thickly the river banks, the stagnant inlets, old channels, false passages and occasional island ponds. This grim feature of the landscape forces itself upon the attention almost everywhere and, desolate as it is, soon comes to have a peculiar interest and

charm for the bird-lover, for these flooded dead-timber areas are soon discovered to be the chosen homes of the very choicest of the feathered tribes frequenting these parts.

With this brief itinerary of our wanderings and general description of the topography of the country visited, the chief outcome of these investigations may be stated at once. At all points visited throughout this five hundred square miles of bottomland, the Prothonotary Warbler was found to be a common summer resident, and as we advanced southward toward the Iowa line it became one of the most frequent and noticeable of the birds. They were found only in the bottomland and apparently do not pass up the heavily wooded deep ravines of the tributary rivers and streams. Extensive examination throughout many miles of several of these seemingly suitable valleys revealed not a single bird of this species, and Dr. Hvoslef after years of observation in the Root River Valley, between Lanesboro and the Mississippi River, has never seen the bird thereabouts. At La Crescent and Red Wing, where some attention was given to the upland and bluffs, nothing was seen of these birds in such positions and, common as they were in the broad valley below, they would inevitably have been entirely overlooked had not their chosen haunts, to which they seemed to be so closely and persistently attached, been invaded. The most northern point to which they appeared to ascend in the valley was a short distance below Hastings (about four miles), where a single individual was seen by Mr. Dart, on July 4, 1898. This was about $44^{\circ} 45'$ north latitude, and one hundred and thirty miles from the Iowa line by the river valley, but only eighty-five miles in a direct southerly line. Thus this species is quite generally distributed over an area one hundred and thirty miles northwest and southeast and averaging three miles in width, — in all about five hundred square miles, which is divided, probably, about equally between Minnesota and Wisconsin. A very low estimate per mile would show that certainly several thousand Prothonotary Warblers pass the summer in this valley north of latitude $43^{\circ} 30'$, and that at least one half of this number rear their young on Minnesota soil. Except an indefinite record (probably a mistake in identity) for the Heron Lake region there is no account of the occurrence of this bird anywhere else in the State.

The narrow strip of Minnesota territory under consideration in this paper, together with the adjoining lowlands in Wisconsin, have of late years been given a tentative and rather indefinite position on faunal charts as a northward prolongation or tongue of the Carolinian Fauna. The facts here presented may perhaps render more positive such assignment of this low-lying and sheltered valley and reveal it as being possessed of an even more definite Carolinian character than supposed. The presence of the Prothonotary Warbler in such numbers suggested that other southern birds ought to be found, but in this we were disappointed with the two following exceptions. The Louisiana Water Thrush (*Seiurus motacilla*), not found as far north as Minneapolis, was present in small numbers at Red Wing and thence southward throughout the entire valley and in the neighboring wooded lowlands to the westward. This bird is probably generally distributed throughout the timbered areas of Southern Minnesota, reaching a limit at about $44^{\circ} 45'$ north latitude. Beyond this Grinnell's Water Thrush (*Seiurus noveboracensis notabilis*) is alone found. The other exception proved a most unexpected one. We found the Red-bellied Woodpecker (*Melanerpes carolinus*) permanently resident in the heavy timber of the bottomland in Houston County. Mr. Harrison had several specimens taken near the mouth of Root River, and assured us that they wintered in the great elm forest there found, he having seen them there in January. At Reno we shot a male Red-bellied, June 24, and saw and heard several others. They undoubtedly occur here regularly, and not so very infrequently, over a small area extending northward not to exceed twenty-five or thirty miles from the Iowa line, $43^{\circ} 30'$ north latitude. This bird is here reported from Minnesota for the first time and from a station many miles north of the usually assigned northernmost limit of its range in the Mississippi Valley. The 'A. O. U. Check-List' for 1895 says "Southern Michigan and Central Iowa."

A glance at the vegetation of the lower part of this valley may serve to further indicate its Carolinian trend. The black walnut, red mulberry, Kentucky coffee tree, and to a more limited extent, the shell bark hickory find a foothold here, and the woods of Houston County are full of the May apple (*Podophyllum peltatum*).

The poison ivy (*Rhus toxicodendron*) is here a climbing vine, while one hundred miles further north, it is but a low shrub. Small fruits, notably cherries, and a more considerable variety of grapes and apples than occur further north, are truly hardy under the shelter of the high bluffs; and the chestnut, flowering dogwood, and trumpet creeper, can be induced to grow in cultivation in similar situations. An apple tree of the St. Lawrence variety has been growing on the farm of Mr. Harris at La Crescent for over twenty-six years, and is now a veteran with trunk some eighteen inches in diameter.

Doubtless other forms of life would bear equally clear testimony in the same direction, but unfortunately, I am unable to call them to an accounting at this time.

It does not seem worth while to enter here upon an extended account of the habits of the Golden Swamp Warbler as observed in Minnesota, since it would be but a repetition of that which has already been so ably and satisfactorily chronicled by Mr. William Brewster, W. E. Loucks, and others. Suffice it to say that everywhere, with one curious exception, the birds were nesting in holes excavated by the ubiquitous Downy Woodpecker. Nowhere did we find inhabited nests placed in natural cavities as in crevices or crannies behind loose bark, but from evidence afforded by one or two old nests apparently of this species, such places are apparently sometimes used. Given a flooded area where the long since lifeless willows were standing gaunt and gray with unsteady and crumbling trunks among the other less decrepit forms and there the Prothonotaries were sure to be, often several pairs in a tract of only a few acres.

Not unfrequently small willow, maple, and birch stubs and the dead and rotting trunks of larger trees fringing the edge of the main river channel and marking the line of the heavy forest behind were the homes of many couples. Often these stumps were but mere shells four or five inches in diameter and projecting not more than three or four feet above the surface of the water. Quite commonly they were thoroughly water-soaked, the only dry thing about them being the pretty little nest with its foundation of green moss bearing on its top the frail structure of fine grass and bark. Occasionally the nests were placed higher



FIG. 3. NEST AND EGGS OF PROTHONOTARY WARBLER, exposed in situ. Houston Co., Minn.



FIG. 4. CHARACTERISTIC RESORT OF PROTHONOTARY WARBLER. Nesting stub in foreground. Upper right-hand corner, male approaching nest. From life. Near Redwing, Minn.

up in dry situations and sometimes in large cottonwood and maple stumps, the latter being the places chosen when the birds frequented the heavier growing timber. About Reno, six miles from the Iowa line where the birds were particularly abundant, the sombre forest, here very heavy with muddy, oozy bottom and little underbrush, was much frequented by this bird and the forcible ringing chant of the male Prothonotary joined in the deep forest with the incessant bird chorus coming from myriads of American Redstarts, countless Vireos of several kinds, Wood Thrushes, and Catbirds, innumerable Rose-breasted Grosbeaks, an occasional Louisiana Water Thrush, and a varied assemblage of harsh-voiced Woodpeckers, with a perpetual undertone of small Flycatcher notes.

A singular departure from the natural nesting habits of the Prothonotary Warbler was observed and studied at La Crescent, and the facts are perhaps sufficiently interesting to warrant brief recital here. Goss in his 'Birds of Kansas,' and Harrison in the article in the 'Oölogist' above quoted, tell of finding this Warbler abandoning the woods, and selecting, after the fashion of the Bluebird and the House Wren, building sites about dwellings, bridges, and other structures. La Crosse and La Crescent lie on opposite sides of the Mississippi River, and an iron truss railroad bridge with long tressel work approaches connects them. Over this bridge there passes a never ceasing stream of railroad trains, and through the swinging draw a procession of boats day and night—a busy, noisy place, very unlike the peaceful calm and seclusion that reigns in the depths of the pathless and almost impenetrable expanse of wooded bottom land that stretches away on all sides. And yet here the usually shy and retiring Golden Swamp Warbler has forsaken its accustomed haunts so close at hand, and with unexpected daring and infinite pains has sought out and utilized places for rearing its young on and about this busy thoroughfare. Mr. Harrison, who for nineteen years has been draw-tender and engineer on this bridge, has long watched and encouraged this confiding trait, and has come to speak of these little companions in terms of endearment, and to look eagerly for their springtime return. He has from time to time, nailed up boxes and sections of hollow logs in seemingly most

impossible places, and they have year after year taken possession of them and built nests in them with great labor, and reared their young within a few feet of the thundering trains, clanking and creaking machinery of the draw, and escaping steam from the engine house high on the top of the draw in midstream. At the time of our visit, June 24, a pair were building a second nest in a cigar box nailed to a window casing of the engine room, carrying to this lofty, exposed position, great bunches of moss from the distant shore, with a sweeping wind blowing them hither and thither, and making the task a well-nigh impossible one. Lower down, just where the outer end of the draw came banging against the abutting pier, and not four feet from the rail, a female Prothonotary was sitting composedly on her nest, built in the bottom of a tin ventilator cap that had been knocked from a lamp box and fallen, open end up, down between the box and a girder, supporting a much used ladder. The little cup-like cap was four inches high, and three inches in diameter, and the birds had partly filled it with the usual green moss and fine grass. It contained the customary full first set of six eggs. (See Fig. 5.) Still another pair had a nest in a shallow cavity in a piece of slab wood, nailed to one of the tressel supports and close under the roadbed of the railroad.

The male of the pair engaged in building in the cigar box on the engine house window had, before the box was nailed up by Mr. Harrison, investigated the entire inside of the engine room, entering by the open door. Mr. Harrison thinks the male always selects the nesting place. This one first examined carefully into the merits as a building site of the tin drinking cup hanging against the wall and then spent some time going in and out of an old soft hat that reposed in a large pigeon hole in one corner of the room. He did not abandon this indoor quest until the box outside was offered him when he at once accepted the suggestion and was soon off for his waiting mate who, after a little earnest coaxing, accepted the tenement, and they at once went to work to furnish it,—no easy task, as already described. (See Fig. 6.)

It certainly seemed most strange after having spent most laborious days in making the acquaintance of this elegant little bird in its secluded natural haunts, to find it here in all the steam, smoke

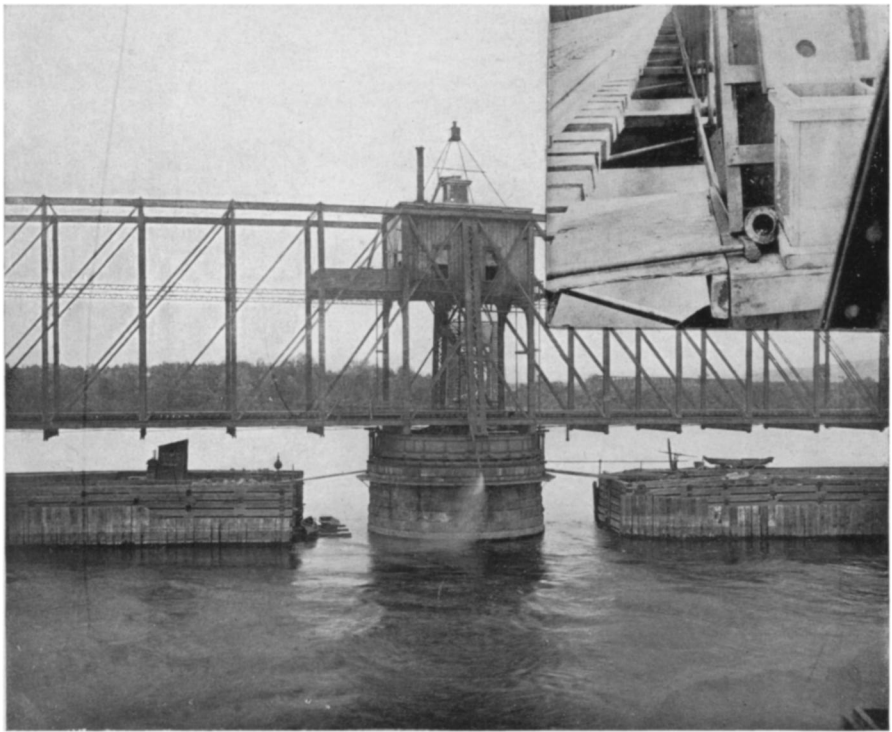


FIG. 5. NESTING PLACE OF PROTHONOTARY WARBLER in bridge over Mississippi River, opposite La Crescent, Minn. Upper right-hand figure, nest in the ventilator cap, exposed for photographing.



FIG. 6. PROTHONOTARY WARBLER. Nest in cigar box on window casing of engine house, on top of bridge. Lower figure, nest and eggs exposed

and noise of this exposed place. But they seemed not at all disturbed, and flitted about among the iron work of the bridge, singing the vigorous little song that rings so forcibly through the deep woods, but which was here almost lost amid the din of machinery and the whistling of the wind. Here only did I hear the other true nuptial song of this Warbler described by Brewster and mentioned by Goss. Standing by the engine house on the top of the bridge I saw the male rise from the topmost girder, and, while hovering high over the river with outspread tail and fluttering wings and head thrown back, after the manner of the Maryland Yellowthroat, deliver first the usual rapid monotone of five or six notes and then a pleasing varied warble, full and strong in some of its notes and far sweeter than the usual utterance.

This day of bird study in strange places was ended by Mr. Harrison exhibiting to us from his collection on a goodly sized cigar box containing a Prothonotary Warbler's nest and set of six eggs. The box had been nailed the year before to a small building on a pier in mid-river, and in this isolated and far-away position had been compactly filled to more than half its capacity with moss and grass, carried from the river banks by a vigorous pair of these little birds. And still further evidences of the erratic domestic fancies of the species were pointed out. One pair had alternated seasons with a family of Bluebirds in a little wooden box affixed to a low post close by a switch house, and on the edge of a platform where baggage and passengers were daily transferred. Another couple had established themselves in a cleft in one of the piles of the retaining fence at the end of the bridge; still another in a tin cup in a small barn near the bridge, entering the building through a broken pane of glass; and lastly a pair began a nest in a pasteboard box on a shelf in a little summer house by the river bank, but were disturbed before completing it. Surely a surprising record and showing this charming bird possessed of a nature capable of a degree of domestication equal to that of the Martin, Phœbe, Bluebird and House Wren.

In concluding this paper it may be fairly said, I think, that it has been clearly shown that the subject of this sketch not only penetrates in goodly numbers well up into Minnesota territory, but that it has been long and well established there; is at home

in many and diverse places; and that its regular presence in such numbers imparts to this portion of the upper Mississippi Valley a faunal coloring of rather more southern hue than was to be expected.

NOTES ON SOME OF THE BIRDS OF EASTERN NORTH CAROLINA.

BY J. GILBERT PEARSON.

WHILE making some investigations during the past summer (1898) in connection with the State Geological Survey, I was located from April 1 to August 20 on the North Carolina coast, at various points from Elizabeth City southward to Little River on the South Carolina border. The nature of my work was such as to permit of some opportunities for investigation of the avifauna of the regions visited, and as a result of the observations made at that time, I have prepared the following brief notes.

Micropalama himantopus. STILT SANDPIPER.—The region about Cape Hatteras abounded in bird life during my second stay there, which began on May 2, and continued until May 20. On the wet grassy beaches near the lighthouse birds swarmed literally by the thousands. I there observed, and with one exception secured, specimens of Least, Spotted, Semipalmated, White-rumped, and Red-backed Sandpipers; Dowitcher; Sanderling; Semipalmated, and Black-bellied Plovers (some of the latter in full summer plumage); Yellowlegs and Greater Yellowlegs; Wilson's Snipe; Turnstone; and Long-billed Curlew. On May 19, I secured a Stilt Sandpiper. It was shot singly while flying alone, no other birds on the wing being near at the time. This I believe to be the first record of the bird taken in the State.

Nycticorax nycticorax nævius. BLACK-CROWNED NIGHT HERON.—Information in regard to this bird's occurrence in North Carolina has been confined to a few scattering notes of single individuals which have been taken at various points. On April 30, I visited a colony of Herons which was breeding on a small island in Mattamuskeet Lake, situated in Hyde County, and counted there seventy-five nests of the Little Blue Heron, all of which contained eggs. These nests were situated in

says the circular, "it is justifiable to shoot specimens which are new to you for purposes of identification, but you should make the best use of the bird *before* you kill it, so it will not be necessary to shoot more of the same kind in order to tell what they are." It is the aim of the circular to discourage the 'fad' of egg-collecting and its consequent waste of bird life, while still encouraging the study of birds.

A SOPHISM more or less current among advocates or abettors of indiscriminate bird destruction, either for millinery or other needless purposes, is perhaps too obviously disingenuous to require serious treatment, yet doubtless many thoughtless people are liable to mistake it for a sincere statement of fact, namely, that because millions of birds are reared annually for no other purpose than to have their necks wrung or their heads chopped off and their bodies used for food, or to be daily robbed of their eggs for man's use, therefore there is no reason why Egrets, Terns, Birds of Paradise, Tanagers, Warblers and other wild birds of fine plumage should not be killed without stint, or their nests robbed by the small boy and the commercial egg-collector. The whole tribe of barn-yard fowls is under man's protection, and reared for profit under artificial conditions, the supply being easily rendered equal to the demand, just as in the case of hay or grain or other farm products. Man's pecuniary interest is here involved in such a way that the extermination of a species is impossible. In the case of wild birds and beasts the case is wholly different. Here man interferes only as a destroyer, with the sad results we already too well know, whether we turn to the wild game animals and birds, or to the numerous victims of the milliner's greed. When free from man's interference nature maintains a fair equilibrium; the death rate, from normal causes, just about equalling, in the long run, the natural limit of reproduction. Hence when man interferes, and fashion claims certain species as her victims, a wholesale, senseless, indiscriminate slaughter supervenes, over and above the death rate nature is prepared to meet; and the small boy and the 'egg-hog' add their powerful aid, in the diminution of our insectivorous song birds, to the efforts of the 'plume hunter' in sweeping from the face of the earth some of the most graceful and beautiful forms of bird life, and which it is beyond man's power to replace.

Erratum.—In printing Dr. Thomas S. Roberts's article 'The Prothonotary or Golden Swamp Warbler (*Protonotaria citrea*) a Common Summer Resident in Southeastern Minnesota,' appearing in this number of 'The Auk' (pp. 236-246) the name of the author was accidentally omitted, although duly given in the page-headings.